

## **CLAIMS**

### **What is claimed is:**

1. An implantable device that detects and discriminates between ischemia and myocardial infarction of a patient's heart, the device comprising:
  - a plurality of electrodes that provide a plurality of cardiac activity sensing electrode configurations;
  - a sensing circuit that provides a plurality of electrograms in response to cardiac activity sensed by the electrode configurations;
  - and
  - a discriminator that detects and discriminates between ischemia and myocardial infarction responsive to ST segments of the electrograms.
2. The device of claim 1 wherein the discriminator is responsive to positive ST segments of the electrograms with respect to a baseline and negative ST segments of the electrograms with respect to a baseline to detect myocardial infarction and ischemia respectively.
3. The device of claim 1 wherein the device includes a conductive enclosure and wherein the conductive enclosure is one of the plurality of electrodes.
4. The device of claim 1 further comprising a summer that provides a sum of the absolute value of the electrograms and wherein the discriminator is responsive to the electrogram absolute value sum to detect ischemia and myocardial infarction.

5. The device of claim 4 further comprising a divider that divides the electrogram absolute value sum by an amplitude of one of the electrograms to provide a normalized value and wherein the discriminator detects myocardial infarction and ischemia when the normalized value exceeds a predetermined value.

6. The device of claim 5 wherein the amplitude of one of the electrograms is an R wave amplitude.

7. The device of claim 1 further comprising a summer that provides a sum of ST segments of the electrograms, a divider that provides a normalized ST segment value from the ST segment sum, and wherein the discriminator detects myocardial infarction when the normalized ST segment value is greater than a first value and detects ischemia when the normalized ST segment value is less than a second value.

8. The device of claim 1 wherein the discriminator discriminates between an ischemic condition of the heart, a myocardial infarcted condition of the heart, and an equivocal condition of the heart.

9. The device of claim 8 further comprising an arithmetic logic unit that provides an electrogram value of the electrograms, wherein the discriminator detects myocardial infarction when the electrogram value is greater than a first value, ischemia when the electrogram value is less than a second value, and the equivocal condition when the electrogram value is between the first and second values.

10. The device of claim 8 wherein the discriminator provides a secondary analysis in response to detecting an equivocal condition.

11. The device of claim 10 wherein the discriminator determines at least one of patient heart rate, physical activity, and posture during the secondary analysis.

12. The device of claim 11 wherein the discriminator detects and discriminates between spasm, anxiety, and exercised induced ischemia during the secondary analysis.

13. The device of claim 1 wherein the discriminator determines an ischemia burden responsive to detecting ischemia.

14. The device of claim 13 wherein the ischemia burden is proportional to ischemia duration.

15. An implantable device that discriminates between ischemia and myocardial infarction of a patient's heart, the device comprising:  
a plurality of electrodes that provide a plurality of sensing electrode configurations;  
a sensing circuit that senses cardiac activity detected by the plurality of sensing electrode configurations; and  
a discriminator that processes the cardiac activity to discriminate between ischemia and myocardial infarction.

16. The implantable device of claim 15, wherein the discriminator is operative to process ST segments of the cardiac activity from the plurality of sensing electrode configurations to discriminate between ischemia and myocardial infarction.

17. A method of discriminating between ischemia and myocardial infarction of a patient's heart, the method comprising:

sensing cardiac activity of the heart with a plurality of cardiac activity sensing electrode configurations to provide a plurality of signals; and

discriminating between ischemia and myocardial infarction based on the plurality of signals.

18. The method of claim 17 further comprising determining an ischemia burden responsive to detecting ischemia.

19. The method of claim 17 wherein discriminating further comprises detecting an equivocal condition other than ischemia or myocardial infarction and wherein the method includes the further step of conducting a secondary diagnosis responsive to detecting the equivocal condition.

20. The method of claim 19 wherein the secondary diagnosis includes determining at least one of heart rate, physical activity, and posture of the patient.

21. The method of claim 17 wherein discriminating comprises processing ST segments of the plurality of signals to discriminate between ischemia and myocardial infarction.

22. The method of claim 21 wherein processing ST segments of the plurality of signals comprises detecting a myocardial infarction based on positive ST segments with respect to a baseline, and detecting ischemia based on negative ST segments with respect to a baseline.